

BROAD MOTOR VALVE

MODEL SELECTION & DESIGN MANUAL



■ Functions

- Flow control(PID).
- Flow shutoff (completely sealed).
- Power fail to close automatically.

■ Applications

- Widely used for air conditioning, heating applications, water supply and drainage, chemical engineering, food, energy and other industries.
- Chilled/heating water, cooling water, hot water, city water, dry steam, air, nitrogen, exhaust, oil and other non-corrosive mediums.
- Low-corrosive mediums (e.g. beverages).
- Special orders for corrosive mediums(e.g. Sulfates).

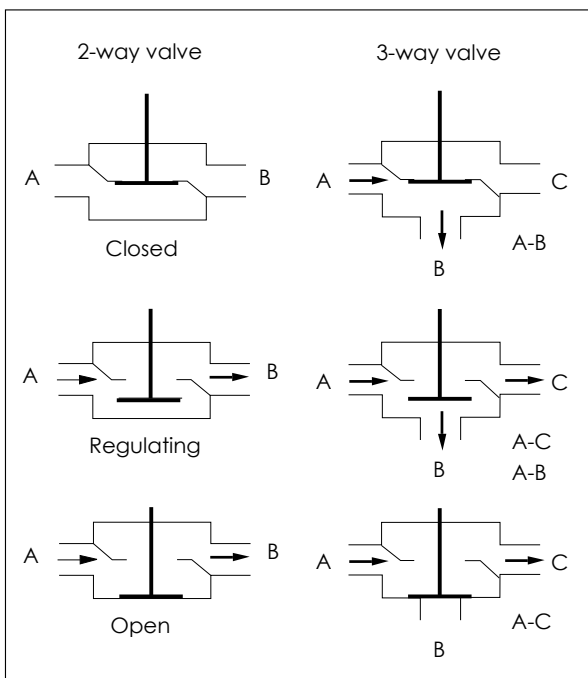
■ Features

- The only valve in the world that ensures 100% shutoff.
- Power fail to automatically close.
- Low resistance, far less than similar products.
- High pressure limit and light-weighted.
- Competitive pricing, only about 40% of the similar European and American products.

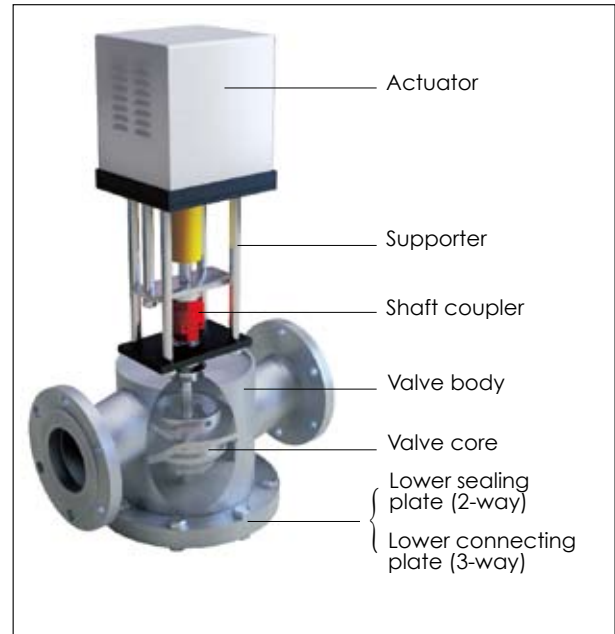
Working Principle & Structure

Working principle

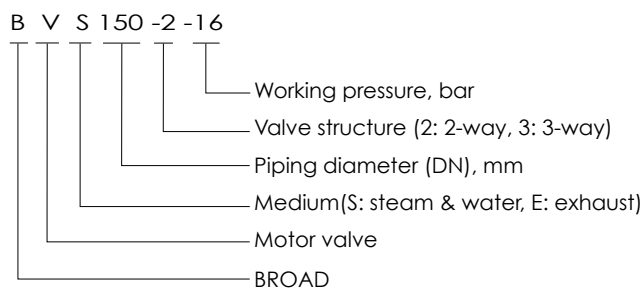
- The controller receives external 4~20 mA analog signals and sends voltage signals to actuator to drive motor after comparison and calculation. The meshing between transmission nut and transmission screw changes motors' rotation to linear reciprocating motion to actualize motor valves' regulating and on/off function.
- Auto charge in running mode: in case there is a power failure, the reset device sends the stored power to the controller to shut off the valve.
- PID control adjusts the flow and load precisely.



Structure



Nomenclature



Technical Features


Steam and water motor valve (motor valve for short)

| No. | Items | Specifications |
|-----|---------------------|---|
| 1 | Working pressure | 8/16 bar, max 24 bar (special order), 100% sealed. Leakage rate $<10^{-6}$ Pa·m ³ /s when used in vacuum |
| 2 | Working medium | Water, steam, air, oil (special orders for other mediums) |
| 3 | Medium temperature | 0~180°C |
| 4 | Ambient temperature | -30~55°C |
| 5 | Power supply | 220/110V,50/60Hz |
| 6 | Protection Level | IP44 |
| 7 | Input signal | 4~20 mA analog |
| 8 | Material | Body with low-carbon steel ,shaft and sealing surface with stainless steel |
| 9 | Sealing | Special polypropylene |
| 10 | Leaking rate | 0 |
| 11 | Connecting mode | Standard flange |



Exhaust motor valve (exhaust valve for short)

| No. | Items | Specifications |
|-----|---------------------|--|
| 1 | Working pressure | 0.3 bar,max 1 bar(special order), 99.5% sealed. No automatic shutoff function after power failure,but can be manually shutoff. |
| 2 | Working medium | Exhaust gases |
| 3 | Medium temperature | $\leq 600^{\circ}\text{C}$ |
| 4 | Ambient temperature | -30~70°C |
| 5 | Power supply | 220/110V,50/60Hz |
| 6 | Input signal | 4~20 mA analog |
| 7 | Material | Stainless steel |
| 8 | Sealing | Aluminum silicate |
| 9 | Protection grade | IP44 |
| 10 | Connecting mode | Thin flange(3pcs to be supplied) |



Parameters

2-way motor valve

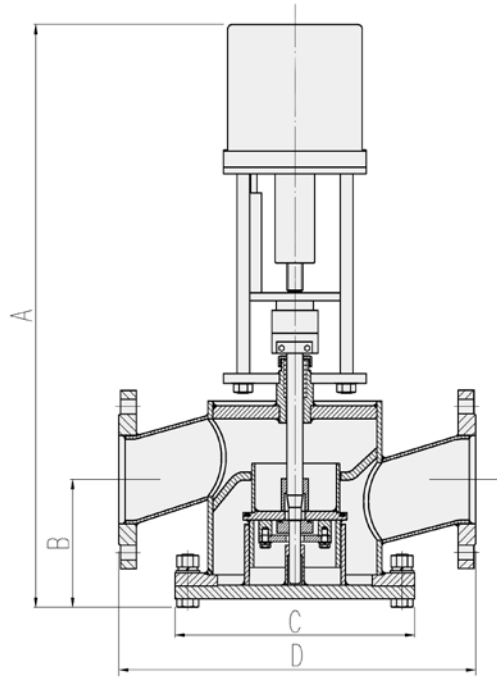
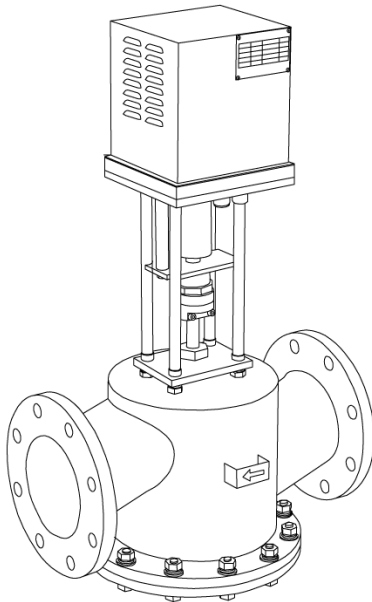
| No. | Model | Piping diameter (DN) | Steam flow | Water flow | Allowable differential pressure bar | Input power W | Weight kg |
|-----|-------------|-------------------------|-------------------|-------------------|--|---------------------|--------------|
| | | mm | m ³ /h | m ³ /h | | | |
| 1 | BVS20-2-16 | 20 | 36 | 5 | 12 | 70 | 23 |
| 2 | BVS25-2-16 | 25 | 56 | 6 | 12 | 70 | 24 |
| 3 | BVS32-2-16 | 32 | 90 | 12 | 12 | 70 | 25 |
| 4 | BVS40-2-16 | 40 | 140 | 16 | 12 | 70 | 26 |
| 5 | BVS50-2-16 | 50 | 210 | 26 | 12 | 70 | 29 |
| 6 | BVS65-2-16 | 65 | 420 | 40 | 10 | 70 | 34 |
| 7 | BVS80-2-16 | 80 | 550 | 60 | 10 | 90 | 50 |
| 8 | BVS100-2-16 | 100 | 990 | 100 | 8 | 90 | 55 |
| 9 | BVS125-2-16 | 125 | 1550 | 140 | 8 | 100 | 77 |
| 10 | BVS150-2-16 | 150 | 2230 | 200 | 8 | 100 | 96 |
| 11 | BVS200-2-16 | 200 | 3960 | 300 | 4 | 170 | 112 |
| 12 | BVS250-2-16 | 250 | 7070 | 400 | 4 | 170 | 180 |
| 13 | BVS300-2-16 | 300 | 10185 | 500 | 2 | 170 | 260 |
| 14 | BVS350-2-16 | 350 | 13860 | 700 | 2 | 180 | 314 |
| 15 | BVS400-2-16 | 400 | 18110 | 900 | 2 | 180 | 408 |

3-way motor valve

| No. | Model | Piping diameter (DN) | Steam flow | Water flow | Allowable differential pressure bar | Input power W | Weight kg |
|-----|-------------|-------------------------|-------------------|-------------------|--|---------------------|--------------|
| | | mm | m ³ /h | m ³ /h | | | |
| 1 | BVS20-3-16 | 20 | 36 | 5 | 12 | 70 | 24 |
| 2 | BVS25-3-16 | 25 | 56 | 6 | 12 | 70 | 25 |
| 3 | BVS32-3-16 | 32 | 90 | 12 | 12 | 70 | 26 |
| 4 | BVS40-3-16 | 40 | 140 | 16 | 12 | 70 | 28 |
| 5 | BVS50-3-16 | 50 | 210 | 26 | 12 | 70 | 32 |
| 6 | BVS65-3-16 | 65 | 420 | 40 | 10 | 70 | 38 |
| 7 | BVS80-3-16 | 80 | 550 | 60 | 10 | 90 | 52 |
| 8 | BVS100-3-16 | 100 | 990 | 100 | 8 | 90 | 59 |
| 9 | BVS125-3-16 | 125 | 1550 | 140 | 8 | 100 | 79 |
| 10 | BVS150-3-16 | 150 | 2230 | 200 | 8 | 100 | 102 |
| 11 | BVS200-3-16 | 200 | 3960 | 300 | 4 | 170 | 126 |
| 12 | BVS250-3-16 | 250 | 7070 | 400 | 4 | 170 | 203 |
| 13 | BVS300-3-16 | 300 | 10185 | 500 | 2 | 170 | 285 |
| 14 | BVS350-3-16 | 350 | 13860 | 700 | 2 | 180 | 498 |
| 15 | BVS400-3-16 | 400 | 18110 | 900 | 2 | 180 | 604 |

Dimensions

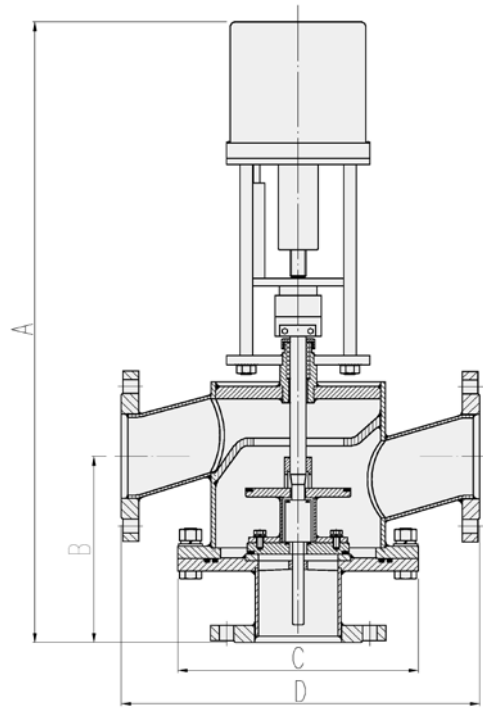
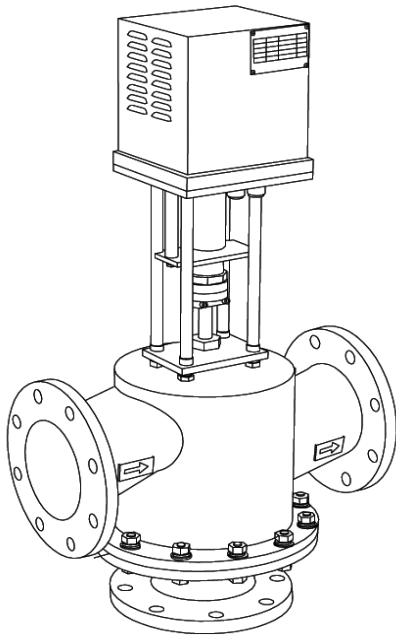
2-way motor valve



(Unit: mm)

| No. | Model | A | B | C | D |
|-----|--------|------|-----|---------|------|
| 1 | BVS20 | 625 | 80 | 125x125 | 210 |
| 2 | BVS25 | 625 | 80 | 125x125 | 210 |
| 3 | BVS32 | 625 | 80 | 125x125 | 210 |
| 4 | BVS40 | 625 | 80 | 125x125 | 230 |
| 5 | BVS50 | 660 | 105 | 137x137 | 230 |
| 6 | BVS65 | 660 | 105 | 155x155 | 310 |
| 7 | BVS80 | 825 | 160 | Φ236 | 350 |
| 8 | BVS100 | 840 | 165 | Φ258 | 410 |
| 9 | BVS125 | 870 | 170 | Φ302 | 480 |
| 10 | BVS150 | 885 | 185 | Φ356 | 530 |
| 11 | BVS200 | 1160 | 235 | Φ408 | 645 |
| 12 | BVS250 | 1220 | 260 | Φ508 | 825 |
| 13 | BVS300 | 1330 | 315 | Φ580 | 880 |
| 14 | BVS350 | 1540 | 410 | Φ630 | 1070 |
| 15 | BVS400 | 1540 | 410 | Φ746 | 1170 |

3-way motor valve

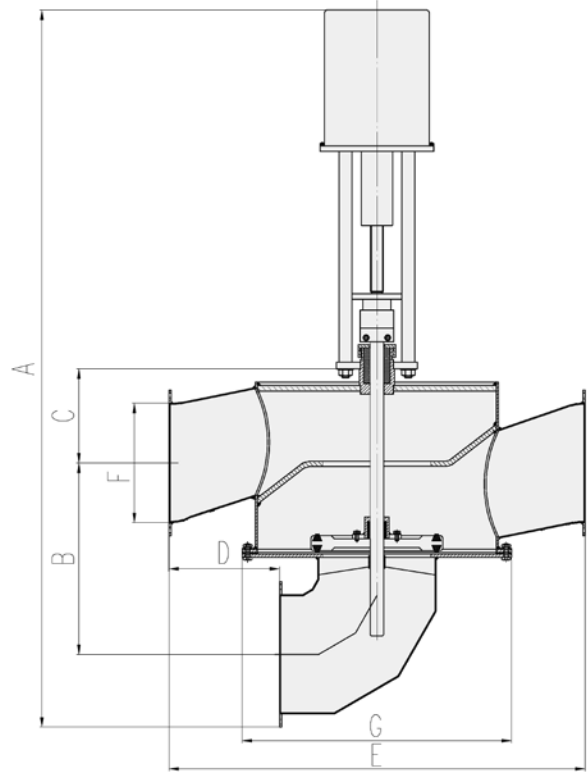
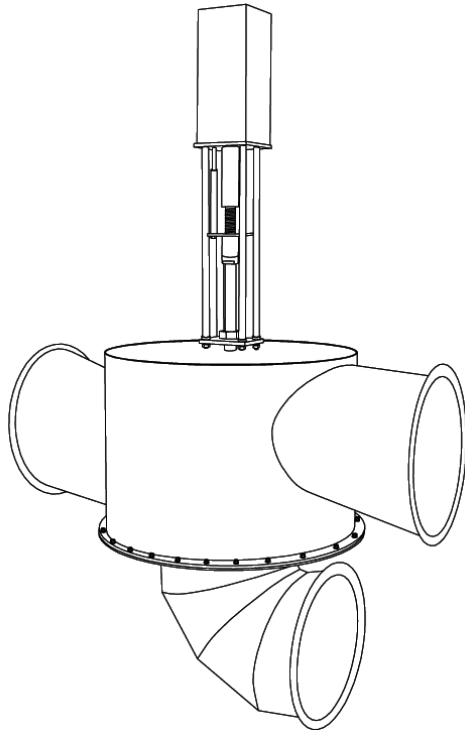


(Unit: mm)

| No. | Model | A | B | C | D |
|-----|--------|------|-----|---------|------|
| 1 | BVS20 | 690 | 145 | 125x125 | 210 |
| 2 | BVS25 | 690 | 145 | 125x125 | 210 |
| 3 | BVS32 | 690 | 145 | 125x125 | 210 |
| 4 | BVS40 | 690 | 145 | 125x125 | 230 |
| 5 | BVS50 | 730 | 170 | 137x137 | 230 |
| 6 | BVS65 | 750 | 190 | 155x155 | 310 |
| 7 | BVS80 | 920 | 250 | Φ236 | 350 |
| 8 | BVS100 | 930 | 250 | Φ258 | 410 |
| 9 | BVS125 | 975 | 275 | Φ302 | 480 |
| 10 | BVS150 | 990 | 290 | Φ356 | 530 |
| 11 | BVS200 | 1320 | 385 | Φ408 | 645 |
| 12 | BVS250 | 1375 | 410 | Φ508 | 825 |
| 13 | BVS300 | 1500 | 485 | Φ580 | 880 |
| 14 | BVS350 | 1720 | 580 | Φ630 | 1070 |
| 15 | BVS400 | 1720 | 580 | Φ746 | 1170 |

Dimensions

Exhaust valve



(Unit: mm)

| No. | Model | A | B | C | D | E | F | G |
|-----|---------|------|------|-----|-----|------|------|------|
| 1 | BVE150 | 1220 | 275 | 140 | 125 | 520 | 160 | 365 |
| 2 | BVE200 | 1415 | 350 | 170 | 165 | 690 | 220 | 440 |
| 3 | BVE250 | 1595 | 415 | 200 | 195 | 815 | 275 | 515 |
| 4 | BVE300 | 1795 | 480 | 240 | 195 | 870 | 325 | 590 |
| 5 | BVE400 | 2285 | 610 | 285 | 330 | 1300 | 425 | 820 |
| 6 | BVE500 | 2570 | 745 | 340 | 405 | 1600 | 530 | 970 |
| 7 | BVE600 | 2800 | 835 | 375 | 520 | 1950 | 630 | 1120 |
| 8 | BVE700 | 3205 | 975 | 480 | 520 | 2100 | 720 | 1285 |
| 9 | BVE800 | 3375 | 1045 | 495 | 585 | 2350 | 820 | 1435 |
| 10 | BVE900 | 3695 | 1165 | 545 | 640 | 2600 | 920 | 1585 |
| 11 | BVE1000 | 4000 | 1270 | 595 | 660 | 2750 | 1020 | 1735 |
| 12 | BVE1250 | 4420 | 1425 | 645 | 750 | 3400 | 1270 | 2060 |
| 13 | BVE1500 | 5200 | 1730 | 745 | 785 | 3700 | 1520 | 2410 |

Installation Guide

- The valve is recommended for indoor installation in a dry and water proof environment. When it is installed outdoors, please make sure the actuator is free from water. Ventilation holes must be installed for corrosive or toxic environment (for special order).
- Upright flange connection.
- If the valve is installed in long pipeline or in occasions with violent vibration, supporters or vibration isolators must be added.
- 12~30 mesh filter to be installed at the valve inlet.
- Medium flow must follow the arrow direction on the valve body. A certain maintenance clearance must be left on the top of the actuator as follows:

| Model | H (mm) |
|-------|--------|
| BVS | ≥320 |
| BVE | ≥500 |

- Heat insulation for valve body and piping is needed if the medium temperature is $\geq 60^{\circ}\text{C}$.
- Power cable and signal wire can not be shared, and must be in different conduits. Signal wire must adopt shielded wire.
- Power supply cable and its installation must be in compliance with international standards:

| Item | Specification |
|-------------|--------------------------|
| Power cable | 0.75 ~1.5mm ² |
| Signal wire | 0.5 ~1.0mm ² |

- Power supply must be cut before wiring to avoid electric shock. When covering the actuator, make sure cables not pressed. The actuator must be grounded to avoid electric shock.
- 2-way and 3-way valves use the same valve body and actuator. Replacement between 2-way and 3-way valve can be done easily without uninstalling the system pipe.
- Ambient temperature: $-40\sim 70^{\circ}\text{C}$. Relative humidity: 50~90%. Installed in a dry indoor environment without exposure to corrosive gases. Accidental vibration and impact should be avoided from damaging the parts.
- Actuator and supporters are forbidden for rigging and force bearing.
- No adjustment to valve settings by non-professionals.
- No contact with valve body while it's running, or you may get scalded.

Spare parts list

| No. | Name | Unit | Quantity | Instruction |
|-----|---------------------------|------|----------|---|
| 1 | Potentiometer | pc | 1 | Sibo |
| 2 | Limit switch | pc | 2 | Omron |
| 3 | Dishing reed | pc | 12 | / |
| 4 | Bearing | pc | 2 | / |
| 5 | Handle | set | 1 | For manual operation |
| 6 | Valve core spring | pc | 2 | For motor valve only. N.A. for \leq BVS40 model. |
| 7 | Shaft sealing ring | pc | 5 | For motor valve only. 7 pcs for \leq BVS40 model. |
| 8 | Valve plate sealing | pc | 2 | For motor valve only |
| 9 | Pilot valve plate sealing | pc | 2 | For motor valve only. N.A. for \leq BVS40 model. |
| 10 | Sealing rope | set | 1 | Made of aluminum trioxide and silicon dioxide, only for exhaust valve |

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